theory: though the three deflections are all small, they are towards the sea, the largest of them being at Fuglenœs, which is very near to the North Cape, and has a large expanse of ocean above it.

19. The least that can be gathered from the deflections of these coast-stations is, that they present no obstacle to the theory so remarkably suggested by the facts brought to light in India, viz. that mountain-regions and oceans on a large scale have been produced by the contraction of the materials, as the surface of the earth has passed from a fluid state to a condition of solidity—the amount of contraction beneath the mountain-region having been less than that beneath the ordinary surface, and still less than that beneath the ocean-bed, by which process the hollows have been produced into which the ocean has flowed. In fact the testimony of these coast-stations is in some degree directly in favour of the theory, as they seem to indicate, by *excess* of attraction towards the sea, that the contraction of the crust beneath the ocean has gone on increasing in some instances still further since the crust became too thick to be influenced by the principles of floatation, and that an additional flow of water into the increasing hollow has increased the amount of attraction upon stations on its shores.

Murree, Punjab,
 August 20, 1863.

June 2, 1864.

The Annual Meeting for the Election of Fellows was held this day.

Major-General SABINE, President, in the Chair.

The Statutes relating to the Election of Fellows having been read, General Boileau and Sir Andrew Scott Waugh were, with the consent of the Society, nominated Scrutators to assist the Secretaries in examining the lists.

The votes of the Fellows present having been collected, the following gentlemen were declared duly elected into the Society:—

Sir Henry Barkly, K.C.B.
William Brinton, M.D.
T. Spencer Cobbold, M.D.
Alexander John Ellis, Esq.
John Evans, Esq.
William Henry Flower, Esq.
Thomas Grubb, Esq.
Sir John Charles Dalrymple Hay, Bart.

William Jenner, M.D.
Sir Charles Locock, Bart., M.D.
William Sanders, Esq.
Col. William James Smythe, R.A.
Lieut.-Col. Alexander Strange.
Robert Warington, Esq.
Nicholas Wood, Esq.

June 9, 1864.

Major-General SABINE, President, in the Chair.

Mr. W. Sanders; Mr. R. Warington; Dr. Jenner; Mr. J. Evans;

Lieut.-Col. Strange; Mr. W. H. Flower; Dr. Cobbold; Col. W. J. Smythe; Sir J. C. Dalrymple Hay, Bart.; and Mr. A. J. Ellis, were admitted into the Society.

Pursuant to notice given at the last Meeting, MM. Claude Bernard, Jean Bernard Léon Foucault, and Adolph Wurtz, all of Paris, were balloted for and elected Foreign Members of the Society.

The following communication was read :—

"Description of the Cavern of Bruniquel, and its Organic Contents. —Part I. Human Remains." By Professor RICHARD OWEN, F.R.S., &c. Received May 12, 1864.

(Abstract.)

In this communication the author gives an account of the Cavern of Bruniquel, Department of the Tarn and Garonne, France, in the state which it presented when visited by him in January 1864, and a description of the human remains discovered therein by the proprietor, the Vicomte de Lastic St. Jal, in 1863, and subsequently by the author in January 1864.

The circumstances under which these discoveries were made are minutely detailed, and the contemporaneity of the human remains with those of the extinct and other animals with which they are associated, together with the flint and bone implements, is shown by the evidences of the plastic condition of the calcified mud of the breccia at the time of interment, by the chemical constitution of the human bones, corresponding with that of the other animal remains, and by the similarity of their position and relations in the surrounding breccia.

Among the principal remains of the men of the flint-period described are the following :—1st, the hinder portion of the cranium, with several other parts of the same skeleton, which were so situated in their matrix as to indicate that the body had been interred in a crouching posture, and that, after decomposition and dissolution of the soft parts, the skeleton had yielded to the superincumbent weight; 2nd, an almost entire calvarium, which is described and compared with different types of the human skull, shown to be superior in form and capacity to the Australian type, and more closely to correspond with the Celtic type, though proportionally shorter than the modern Celtic, and the form exhibited by the Celtic cranium from Engis, Switzerland; 3rd, jaws and teeth of individuals of different ages.

After noticing other smaller portions of human cranium, the author proceeds to describe minutely the lower jaw and teeth of an adult, and upper and lower jaws of immature individuals, showing the characters of certain deciduous teeth. The proportions of the molars are not those of the Australian, but of other races, and especially those of ancient and modern Europeans. As in most primitive or early races in which mastication was little helped by arts of cookery or by various and refined kinds of food, the crowns of the molars, especially of $m\,1$, are worn down beyond

the enamel, flat and smooth to the stumps, exposing there a central tract of osteodentine without any sign of decay.

The paper is illustrated by a view and plans of the cavern, and by figures of the principal human remains, and of two implements of bone on which the Vicomte de Lastic had discovered, on removal of the breccia, outline figures of the head of a reindeer and the head of a horse in profile.

The description of the various remains of the animals killed for food, and of the flint- and bone-implements applied to that and other purposes, will be the subject of a future communication.

<center>*June* 16, 1864.</center>

<center>Major-General SABINE, President, in the Chair.</center>

Dr. Brinton; Professor Boole; Mr. T. Grubb; Sir Charles Locock, Bart.; and Mr. Nicholas Wood, were admitted into the Society.

The following communications were read :—

I. "On Complex Binary Quadratic Forms." By H. J. STEPHEN SMITH, M.A., F.R.S., Savilian Professor of Geometry in the University of Oxford. Received May 18, 1864.

The purpose of this note is to extend to complex quadratic forms some important investigations of Gauss relating to real quadratic forms. We shall consider in order (I.) the definition of the Genera, (II.) the theory of Composition, (III.) the determination of the number of Ambiguous Classes, (IV.) the representation of forms of the principal genus by ternary quadratic forms of determinant 1. For the comparison of the numbers of classes of different orders, we may refer to a paper by M. Lipschitz (Crelle's Journal, vol. liv. p. 193); and for the principles of the theory of complex numbers and complex quadratic forms, to Lejeune Dirichlet's Memoir, "Recherches sur les formes quadratiques à coefficients et à indéterminées complexes" (Crelle, vol. xxiv. p. 291).

<center>I. *The Definition of the Genera.*</center>

Let $f=(a, b, c)$ be an uneven* primitive form of determinant D, and $m=ax^2+2bxy+cy^2$, $m'=ax'^2+2bx'y'+cy'^2$ two numbers represented by f. The generic characters of f are deducible from the equation

$$(ax^2+2bxy+cy^2)(ax'^2+2bx'y'+cy'^2)=$$
$$(axx'+b[xy'+x'y]+cyy')^2-\mathrm{D}(xy'-x'y)^2,$$

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* A primitive form (a, b, c) is uneven, semieven, or even, according as the greatest common divisor of a, $2b$, c is 1, $1+i$, or $(1+i)^2$; *i.e.*, in Lejeune Dirichlet's nomenclature, according as (a, b, c) is of the first, second, or third species. In this paper, when we speak of an uneven, semieven, or even form or class, we shall always suppose the form or class to be primitive. A semieven number is a number divisible by $1+i$, but not by $(1+i)^2$.